TETRA TECH

Kevin Scott
Project Manager

February 17, 2012

Mr. Eric Daly
On-Scene Coordinator
U.S. Environmental Protection Agency Region 2
2890 Woodbridge Avenue
Edison, NJ 08837

**Subject: Data Validation Report for the Riverside Avenue Site**
**Newark, Essex County, New Jersey**
**Contract: EPA Region 7 START, Region 2 Crossover**
**Contract No. EP-S7-06-01**
**Task No. 9004L100178000**

Dear Mr. Daly:

Tetra Tech EM Inc. (Tetra Tech) is submitting the data validation report for subsurface soil samples collected between January 25 and 27, 2012 from the Riverside Avenue site and analyzed for dioxins and furans by Lancaster Laboratories. If you have any questions regarding this report, please contact Harry Ellis at (312) 201-7700 or me at (302) 283-2248 or kevin.scott@tetratech.com.

Sincerely,

Kevin Scott
Project Manager

Enclosure
cc: TDD File

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# DATA VALIDATION REPORT
# RIVERSIDE AVENUE SITE
# NEWARK, ESSEX COUNTY, NEW JERSEY

*Prepared for*

**U.S. Environmental Protection Agency Region 2**
Emergency and Remedial Response Division
2890 Woodbridge Avenue
Edison, New Jersey 08837

*Prepared by*

**Tetra Tech EM Inc.**
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Newark, Delaware 19713

EPA Contract No. EP-S7-06-01

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February 17, 2012

| Prepared by | Approved by |
| --- | --- |
| Harry V. Ellis, Ph.D.<br>Toxicologist | Kevin Scott<br>Project Manager |

## 1.0 Introduction

This data validation report discusses the evaluation of the analytical results for five soil samples collected by Tetra Tech EM, Inc. (Tetra Tech), from the Riverside Avenue site in Newark, Essex County, New Jersey, on 25 through 27 January 2012 as part of a removal assessment. These samples were shipped to the Lancaster, Pennsylvania, facility of Lancaster Laboratories (Lancaster), now a subsidiary of Eurofins Scientific. Lancaster identified the samples as Group No. 1287064 and analyzed them for 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) and related compounds (specifically, the toxic chlorinated congeners and the total homologues) using U.S. Environmental Protection Agency (EPA) SW-846 Method 8290.

Tetra Tech evaluated the analytical results in general accordance with the EPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for chlorinated dibenzo-p-dioxins (CDD) and chlorinated dibenzofurans (CDF) data review, dated September 2005. The requirements of the NFG were modified, as appropriate, to correspond to the specific requirements of SW-846 Method 8290 and the limitations of the short form report (which omits details such as calibration results and raw data) that Lancaster submitted. The validation is based on the following quality control (QC) parameters:

- Holding times and sample preservation
- Blank results
- Laboratory control sample (LCS) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Labeled compound recoveries
- Sample detection limits and estimated maximum possible concentrations

The next section of this report discusses these parameters in turn, with emphasis on the irregularities. A final section provides an overall summary of the results of the validation. An attached spreadsheet lists the validated analytical results and the qualifications applied during this data validation process. These qualifiers may include:

- None = No qualifications; results may be used as reported
- U = The analyte was analyzed for, but was not detected at a concentration exceeding the listed sample quantitation limit
- UJ = The analyte was analyzed for, but was not detected at the listed sample quantitation limit, which is estimated for QC reasons
- J = The analyte was identified, but the concentration is estimated for QC reasons

- J- = The analyte was identified, but the concentration is estimated and may be biased low
- J+ = The analyte was identified, but the concentration is estimated and may be biased high
- R = The sample result was rejected as unusable. The analyte may or may not be present

## 2.0 Sample Group No. 1287064

There were no problems with holding times and sample preservation and with LCS results. Note that Lancaster's report uses "OPR", for "ongoing precision and recovery" as a label for LCS.

The laboratory blank contained low concentrations of a number on analytes, which Lancaster indicated on their report with a "B" flag. However, all of our samples contained either much more of the analyte or no detectable concentration, so no qualifications were applied.

MS/MSD analyses were performed on sample TP7-2. Recoveries of octachlorodibenzo-p-dioxin (OCDD) could not be determined because the unspiked sample contained considerably more than the added spike. All other recoveries, and all relative percent differences, including the one for OCDD, were well within their QC limits so no qualifications were applied for this data gap.

Almost all of the recoveries of the labeled compounds (which are used as both surrogates and internal standards in this analysis) were within their various QC limits. The only exceptions were $^{13}$C-OCDD and $^{13}$C-octachlorodibenzofuran ($^{13}$C-OCDF) in the MSD and LCS samples, which yielded recoveries slightly below their QC limits. No qualifications were applied to the field sample results for these minor irregularities in laboratory samples.

As required by the method, the sample detection limits (SDL) shown on the laboratory report are defined as 2.5 times the electronic noise in the detector near the location where the analyte peak is expected. Lancaster reported only results above the sample quantitation limit (SQL), which corresponds to the lowest calibration standard. No results exceeded the highest calibration standard, so no qualifications were applied for quantitation irregularities. However, a number of peaks did not have the expected ion ratios, which are the criteria for determining if the peaks represent a CDD or CDF. Therefore these peaks are, in whole or in part, non-analytes. Lancaster identified these peaks with a "Q" flag and quantified them as if they were analytes, thus providing an "estimated maximum possible concentration (EMPC)" number. Because of the uncertainty on the identity of the compound or compounds contributing to the peak, these results are considered to be nondetected at the EMPC, rather than the SQL, and were flagged "U" to indicate that.

## 3.0 Overall Evaluation

These analyses went well, with only the types and numbers of irregularities commonly seen in such extremely sensitive analyses. The results may be used, as qualified, for any purpose.